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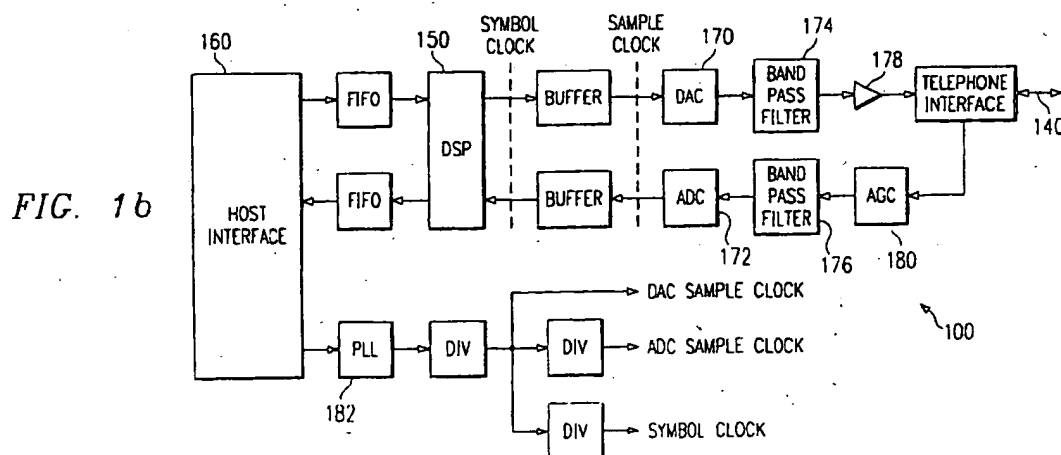
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(54) Multimode modem, and protocols therefor

(57) A modem is provided, which can operate either in voiceband or in higher frequency bands, and which supports several modulation types, such as multicarrier modulation, or carrierless amplitude/phase modulation. The modem uses a digital signal processor, so that different ADSL modulation types can be implemented using the same hardware. Startup and negotiation procedures are also provided. The startup for carrierless am-

plitude/phase modulation allows reliable synchronisation over channels, such as the standard telephone twisted pair lines, which suffer from severe amplitude distortion. In a multicarrier system, the transmitter contains a filter, which is adapted to reduce the effective length of the channel impulse response; the filter uses a combination of convolution in the time domain, and multiplication in the frequency domain, so as to reduce the algorithmic complexity.



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EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
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CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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